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AUTHOR Harter, Nancy
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ABSTRACT

A study was conducted to determine the effects of applying the "Swassing/Barbe Modality Index" (SBMI), an instrument for identifying a student's strongest learning modality, to achieve higher accuracy on spelling lessons and tests. The SBMI was administered to 17 special education students in a class of seven second grade and ten third grade students. The study was then limited to six third grade students--the three with the greatest differential favoring visual modality, the two with auditory strength, and the one student with the strongest kinesthetic differential. The experimental instruction that followed included two weeks of regular classroom work with all students participating in the same activities, and four weeks when lessons were presented to each student in the dominant modality. Case studies revealed that all students except one, an auditory learner, benefited from instruction through their modality strength. However, although overall results did not produce outstanding gains and the data were not statistically significant, the SBMI could be helpful in some special education situations where teachers feel that instruction through specific modalities is warranted. (RL)

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SWASSING/BARBE MODALITY INDEX APPLIED TO SELECTED STUDENTS IN ONE CLASSROOM-- A TEACHER'S REPORT

by

Nancy Harter
Graduate Student

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I. INTRODUCTION

A. Problem.

This study was concerned with the possibility of achieving higher accuracy on spelling lessons and tests by applying the results of the Swassing/Barbe Modality Index to "traditional" teaching.

B. Review of literature on teaching to specific modalities.

Interest in modes of learning began to increase in the 1930s. Harry's study, "An Experiment in Teaching Tactual Reading to Seeing Subjects," dated back to 1931. (Patridge) Two subjects had 5½ hours of intensive instruction on tactual reading. They were then both tested by a Braille adaptation of the Gray Oral Reading Check Tests. Both students failed to reach first grade standards. In 1939 Lowenfeld discovered that some persons were visual minded thinkers and others were non-visual minded. (Bernstein) He determined that 23 per cent of the people were hapatic thinkers, 47 per cent were visual thinkers and 30 per cent were in the middle spectrum. From these beginnings researchers have tried to show the relationship between modes of learning and teaching methods.

At an early age children appear to favor a particular mode. Somers and Miller (1978) examined the results of short term retention in preschool children using visual and tactual modalities. The modality had no overall effects on the short term memory. The interaction was found to be between non-verbal memory, age and modality. Some believe that perceptual abilities

have reached their crest by the end of third grade but perceptual lags have a continuing relationship to school achievement through sixth grade. (Austin and Donovan) Barbe and Milone (February 1981) felt that an individual's modality is not static. It follows a developmental pattern of changing strengths. At the primary grade level students were said to be more auditory than visual and less developed kinesthetically. Between kindergarten and sixth grade vision became the strongest modality, kinesthia next, and last audition. From the late elementary grades to adulthood vision remained the dominant modality followed by audition with kinesthia becoming least important. Stevenson (1972) cited a study done by Otto in 1961 which reported that combining the auditory and visual method was most effective for grade 2 students. For grade 4 students the visual mode was most effective. By grade 6 the auditory and visual modes were equally effective. In the process of acquiring reading skills it was the relationship between modalities that determined the proficiency in the skill. (Silverston and Deichmann) Skills appeared to develop from the single visual skill to a combination of visual-auditory to auditory.

The advantage of teaching through a student's strongest modality has not been proven by research. A thorough study (Robinson) reported in 1972 found that students strong in both auditory and visual modalities had the highest reading achievement regardless of the teaching approach. Those with both modalities low scored the lowest. The students with one strong and one weak modality scored between the two extremes. Neither

the auditory nor visual method of teaching produced better results. Tarver and Dawson (1978) reviewed 15 studies on the interaction between modality preference and method of teaching reading. Of these, 13 showed no interaction between the teaching method and the students modality preference.

Some researchers have felt the reason for lack of interaction between method and modality was the integration of modalities as individuals develop. Gilberg and Gilberg (1978) felt that by third grade auditory and visual abilities should have developed so that one can function equally as well as the other. A study by Newcomer and Goodman (1975) showed that the normal fourth grade students with whom they worked performed equally well whether material was presented in their modality of strength or through another mode.

Results of the same study indicated "the general superiority of the visual mode for information processing regardless of individual modality preferences." (Newcomer and Goodman: 261) Another study (Cunningham) using normal and learning disabled students found that the visual group learned more effectively than the auditory group when material corresponded to their strongest modality. A review of studies on the tactual and visual modalities (Raskin and Baker) indicated that with normal students vision was the superior mode, but for learning disabled students tactual or combine tactual and visual mode led to better performance. By fourth grade learning disabilities may be caused by a developmental lag in the visual, auditory, or kinesthetic modalities. (Meehan)

Others have found that audition is the more effective mode. For short term memory, auditory presentation was superior to visual presentation. (Penney) Jenson (1970) also found that for immediate recall auditory memory was superior to visual memory. However, visual mode was better for delayed recall. This corresponds with the findings of Engle and Durban (1977). In immediate free recall the auditory presentation mode was superior. Better recall resulted in the terminal positions of the lists. Modality of presentation also had an effect on the delay test. For those that had not been tested immediately, the visual modality presentation led to higher performance on the delay test.

Austin and Donovan cite Bateman's 1968 study of visual and auditory modalities. The relationship to beginning reading instruction indicated that the preferred modality had no significant interaction with instructional method. Bateman found that auditory learners made greater gains than visual learners on a measure of reading achievement regardless of instructional method

Plas (1976) hypothesized that using both the visual and auditory modalities would enhance learning of one and two syllable words. With both normal and learning disabled students using both modalities did not produce better results than using one modality. One study using kindergarten through fourth grade students (Hoving, Konick, Wallace) indicated that the modality of presentation did not influence overall recall. Children as young as five years were able to transfer material from one modality into another.

Study has indicated that the mode of presentation may be part of the code used to retrieve information. (Lehman and Hanzel) Information and modality may be stored as a unit and remembered or forgotten together.

In a study of college age subjects individual differences interacted with the presentation modality (DeBoth and Dominowski) disallowing the theory of instructing to particular modalities. The indication of this study was that individual differences were stable across presentation modalities. It was suggested that this may be a developmental factor and the same finding may not occur with elementary school age students.

It should not be assumed that the modality used to instruct was the modality employed by the student. (Kampwirth) A study done with 128 first graders failed to indicate any relationship between modality preference and teaching method. Likewise, a group of 282 second graders indicated no differences between those taught to their strength and those taught to their weakness. Tarver and Dawson (1978) supported this with their findings of no interaction between modality preference and the method of teaching reading.

Several factors may be responsible for these findings. First, instruments used to measure preferred or strongest modality are not in agreement and generally have poor reliability and validity. Second, methods of treatment vary greatly and lack purity of mode. Third, there is no way to determine if the student's brain is converting data from one mode to another. (Kampwirth)

However, there are researchers who believe in the value of teaching through the learner's strongest modality. Wepman (1960) advocated instruction in separate groups of visual and auditory learners for beginning reading. This was based on his findings concerning the development of auditory discrimination abilities in students. He stated that "it seems a wiser course to recognize that perceptual ability is the precursor of comprehension." (Wepman, 1967:361) Dunn and Carbo (1981) also felt that modality strengths of a student should be the basis for grouping and instruction. While Barbe was the co-developer of an instrument for testing modalities, he did not feel that initial teaching needed to be in the modality of the child. (Barbe and Milone: March 1981: Barbe and Swassing) This was to recognize that the teacher had a modality in which he/she performed best. Individual or personal instruction could follow initial teaching. Then several students with the same modality strength could be grouped for additional help if it was needed.

Bursuk's study (1971) of the relationship of modality preference, mode of presentation, and reading achievement found that the visual approach was most effective with visual learners while aural-visual was most effective for auditory learners or no modality preference learners.

Daniel and Tacker (1974) investigated memory for CVC trigrams with eight year old students having auditory, visual, and no preference modalities. They concluded that "a child's preference for modality of stimulus input is an important variable which influences learning." (Daniel and Tacker: 257) They also

felt that it appeared to be advantageous to investigate matching the learning approach with the modality strength for the student with a learning problem.

Two studies with the mildly retarded (Arter and Jenkins; Tyler) did not find that modality instruction benefited the learner. Tyler (1974) also found that neither the auditory nor visual approach was superior.

Teachers' belief in and support of modality instruction has continued regardless of the research, especially as a special education approach. According to Arter and Jenkins (1977), one reason may be that teachers have interpreted the "modality model" in a different way than researchers. If this is the case, it should be determined exactly what teachers perceive as successful. A second reason that teachers have felt successful with the outcomes of modality instruction may be lack of concrete data. Errors could include only remembering the times it worked, interpreting situations in light of impressions, attributing success to modality matching when there may have been other controlling variables.

In reviewing the literature concerning the use of modality strengths as bases for instruction it became apparent that most studies found no positive effect from matching instruction to a student's modality. Since there have been some studies in which instructing through a learner's modality strength indicated a benefit to learners, most researchers and reviewers felt more study should be done in this area. Some problems involving methods used in research (Arter and Jenkins; Kampwirth) have been pointed

out. These need to be solved before accuracy in results can be presumed.

C. Information on the Swassing/Barbe Modality Index.

The Swassing/Barbe Modality Index (SBMI) is an instrument for identifying a student's strongest learning modality. The population used to standardize this test was 637 kindergarten through sixth grade students from one "large southern California elementary school district" composed of urban, suburban and semi-rural areas. (Barbe and Swassing: 85) The proportion of students as to sex and handedness was claimed to be consistent with national figures. There was approximately the national ratio of black to white students but a disproportionately large number of students with Hispanic origin. No discrepancy of scores occurred due to this imbalance. The children were tested by reading specialists who had been trained by the test developer. Data on scores and personality traits was returned to the researchers and entered into a computer for analysis.

Validity: There have been no tests made as to the criterion validity due to the problem of finding generally accepted criteria for measuring modality strengths. Plans have been set up to compare SBMI with several instruments that may have appropriate criteria.

Construct validity was measured through factor analysis. Three factors appeared corresponding to the visual, kinesthetic and auditory modalities. Short term memory appeared as a fourth factor. The researchers felt this supported their contention

of memory being one constituent of modality.

To test for indirect validity a factor analysis was conducted. This included modality scores and achievement measured by the Comprehensive Test of Basic Skills. (McGraw Hill, 1975) The two factors that resulted were achievement and modality. "Since achievement and modality scores loaded on separate and unrelated factors" the researchers concluded that SBMI is not measuring achievement. (Barbe and Swassing: 50)

Reliability: The SBMI was administered to a group of students twice over a four month span. The stability of the subtests ranged from .58 to .67. These were marginally acceptable scores. Thus characterisitcs of each item of the subtest were examined. It was found that the first two items on the test were completed correctly by everyone so added nothing to the consistency of the scale. The last two items, when answered correctly, involved long term memory rather than short term. This was inconsistent with regard to responses on the other items which reflected short term memory. In spite of these marginally acceptable scores the researchers perceived the coefficient of stability to be acceptable for this type of instrument. The Guttman scale was used to measure internal consistency by employing the coefficient of reproducibility. For the subtests of the SBMI all coefficients of reproducibility were above .90, conforming to the structure of an acceptable Guttman scale.

The preceding information was obtained from Teaching Through Modality Strengths: Concepts and Practices. (Barbe and Swassing, 1979) More detailed tables on the standardization of the SBMI can be found in Appendix B of the same source.

II. PROCEDURES AND CASE STUDIES

A. Procedures

1. Selection

The SBMI was administered to the seventeen students in a class composed of seven second graders and ten third graders. Each student worked alone with the teacher while no other students were present in the room. Directions for administering the test were followed.

To evaluate test results five percentage points indicated an educationally relevant difference. One modality being five points greater than each of the other modalities signified the dominant modality. (Barbe and Swassing) Eleven of the students had visual modality strength. Two students had auditory scores significantly higher than their visual or kinesthetic scores. Two students' kinesthetic scores were significantly higher than their visual and auditory scores. One student scored equally high in auditory and kinesthetic modalities and much lower in the visual modality. One student had equally high visual and kinesthetic modality scores and scored much lower in the auditory modality. Students comments on how they arrived at answers did not prove meaningful in evaluating scores. The complete data on test results can be found in Appendix A.

Through consultation with the advisor it was determined that this study be limited to five or six students. One second grade student was eliminated due to a hearing loss. Two other second graders were eliminated due to equally high scores in

two modalities. As a result of these exclusions and the fact that the auditory and kinesthetic learners were in the third grade group, it was more workable to take all students from the third grade group. Due to the greater number of students with visual modality strength only those three with the highest difference between scores were selected. The two students with auditory strength were chosen and the student with the strongest kinesthetic differential was chosen. This totaled six students.

2. Operation

After scrutinizing the work to be done in all subject areas over the six to eight week period of observation and study, it was apparent that spelling would be the most consistent area to follow through. Thus the study was done with the standard text used by this third grade, Spell Correctly (Silver Burdett Co., 1971).

The first two weeks work consisted of regular classroom work with all students participating in the same activities. For the students in the study each was supplemented by a brief time working in their dominant modality. This facilitated the regrouping of students and introduction of new procedures.

During the next four weeks the entire lesson was presented to each student in the study either individually or by groups in their dominant modality. Auditory learners were presented lessons on tapes, listened to the words being spelled on tape, and spelled words orally to each other. The kinesthetic learner used writing on chalkboard, writing in sand, assembling words with cardboard and plastic letters, and pointing during lessons.

Each visual learner had the individual spelling words on cards for correct visual model. Students used these in the manner of flash cards. The cards also were used to compare likenesses and differences in words. Their lessons were presented in written segments and responses were given by showing the individual word cards. At the end of each week students were tested with a combination of word lists and sentence dictations. The sentence dictations used words from the present week and prior weeks.

For eight weeks the students in the study group were observed throughout the school day for characteristics that Barbe and Swassing have found to be attributes of learners in each modality. A list of those characteristics readily observed in the classroom and used in the study can be found in Appendix B.

B. Case Studies

1. Visual Learners

a. Student A

Background: Student A was a right-handed, third grade male, 9 years, 8 months old with an IQ of 120 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in Kindergarten (April 1978) an auditory stanine of 5 and a visual stanine of 6 were obtained.

Basis of selection: His scores on SBMI were visual 56 per cent, auditory 20 per cent and kinesthetic 24 percent. This student had a difference of 32 points between the visual modality and his next higher modality. This was the greatest differential among third grade students and was the basis for selecting this child.

Observation of Visual Learners' Characteristics:

Conformity: Observations of this student indicated he fit into the visual modality characteristics in selected ways. His concentration on reading was very intense. When working, this student was not distracted easily by either movement or sound about him. The appearance, size and spacing of handwriting was good. This was important to Student A. This student used imagery well and could give detailed descriptions. Student A could be an intense listener then suddenly give way to extreme restlessness such as shaking his hands or feet rapidly. He was not overly verbose. His general appearance was always neat and orderly.

Non-conformity: In the area of spelling Student A did not fit the visual modality characteristics. He had much difficulty identifying correct spelling by sight and did not use word configuration.

Treatment: Student A participated in spelling lessons with two other students in the visual modality group. The first two weeks this student supplemented regular class work with words on flash cards and studying word lists. The next four weeks the entire lesson was presented on cards and charts. The responses were given by the student showing the individual word cards.

Results of treatment: During the six weeks of the study Student A's daily work averaged 93 per cent accuracy. His six week average prior to employing his specific modality strength was 91.5 per cent. The six weeks before the study Student A's average on tests was 88 per cent. During the six weeks study

Student A averaged 91 per cent on tests. It appears that working with the visual modality had a minimal effect on Student A's accuracy with spelling.

Prognosis: This student conformed to many of the characteristics of the visual learner but did not exhibit evidence that teaching to his modality strength significantly improved his learning. He appears to have found his own channels for processing materials and has the intellect to overcome any learning problems. Teaching to his modality strength does not appear to be necessary.

b. Student B

Background: Student B was a right-handed, third grade female, 9 years, 6 months old with an IQ of 110 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in kindergarten (April 1978) an auditory stanine of 5 and a visual stanine of 7 were obtained.

Basis of selection: Her scores on SBMI were visual 53 per cent, auditory 25 per cent, and kinesthetic 20 per cent. This student had a difference of 28 points between the visual modality and her next higher modality. This was the second greatest differential among third grade students and was the basis for selecting this child.

Observation of Visual Learners' Characteristics:

Conformity: Student B used visual clues for spelling. She did well in recognizing misspelled words in a list of words. Her handwriting was well spaced and appropriate in size. The appearance of her writing was important to her. Student B showed

evidence of vivid imagination. Her favorite books involved fantasy where great visual imagery must be in play. During periods of inactivity she tended to sit quietly and focus on something or someone in the room. She does not communicate at length, stating her point without embellishment. Student B was concerned with her general appearance and always was neat and orderly.

Non-conformity: Student B did not have much ability to concentrate. She was easily distracted. It was apparent that movement was more distracting to her than sound. While not a restless listener, she was a poor listener, often not knowing what was said.

Treatment: Student B participated in spelling lessons with two other students in the visual modality group. The first two weeks this student supplemented regular class work with words on flash cards and studying word lists. The next four weeks the entire lesson was presented on cards and charts. The responses were given by the student showing the individual word cards.

Results of treatment: During the six weeks of the study Student B's daily work averaged 95 per cent accuracy. Her six week average prior to employing her specific modality strength was 84 per cent. The six weeks before the study Student B's average on tests was 90.5 per cent. During the six weeks study Student B averaged 94.5 per cent on tests. The eight point improvement in daily work appears to be evidence that working in the visual modality is beneficial to Student B. The evidence did not indicate that teaching through the visual modality was

as beneficial to longer term memory involved in testing.

Prognosis: Student B conformed to many of the characteristics of the visual learner and exhibited evidence that she would benefit from teaching to her modality strength. It would be advantageous for Student B to have any new material presented in the visual modality.

c. Student C

Background: Student C was a right-handed, third grade male, 9 years, 3 months old with an IQ of 108 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in kindergarten (April 1978) an auditory stanine of 2 and a visual stanine of 4 were obtained.

Basis of selection: His socres on SBMI were visual 45 per cent, auditory 27 per cent, and kinesthetic 26 per cent. This student had a difference of 18 points between the visual modality and his next higher modality. This student had the third greatest differential among third grade students. On that basis he was selected for the study.

Observation of Visual Learners' Characteristics:

Conformity: Student C was not easily distracted from work that he was assigned. Concentration was sporatic when reading. In discussing a reading passage he always referred to pictures. Student C used visualization and configuration of words when reading and spelling. He did well at recognizing misspelled words in a list. His handwriting was good in size and appearance. He was concerned with neatness if it was the thrust of the lesson. Student C had excellent visual imagination as evidenced by the accuracy of his drawings done from memory. He was

neat and orderly about his personal belongings.

Non-conformity: Student C did not move among his friends without verbal contact. When listening he had difficulty being silent. Listening that involved movement and/or pictures was less troublesome. Student C's response to inactivity was finding something to handle. This sometimes involved writing or drawing. In general appearance Student C looked unkempt.

Treatment: Student C participated in spelling lessons with two other students in the visual modality group. The first two weeks this student supplemented regular class work with words on flash cards and studying word lists. The next four weeks the entire lesson was presented on cards and charts. The responses were given by the student showing individual word cards.

Results of treatment: During the six weeks of the study Student C's daily work averaged 94 percent. His six week average prior to employing his specific modality strength was 91 per cent. The six weeks before the study Student C's average on tests was 94 per cent. During the six weeks study Student C averaged 91.5 per cent on tests. It appears that working in the visual modality had minimal effect on improving Student C's daily work and a negative effect on testing.

Prognosis: Observations of this student showed substantial conformity to the characteristics of the visual learner, but the task evaluation does not exhibit evidence that he benefited from this type of instruction. Long term memory as

shown on tests indicated a negative factor. This would not indicate that all work in the visual modality be eliminated. However, it does appear that Student C need not be instructed through his modality strength to show academic gains.

2. Auditory Learners

a. Student D

Background: Student D was a right-handed, third grade male, 9 years, 0 months old with an IQ of 109 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in kindergarten (April 1978) he obtained stanine scores of 6 in auditory and 5 in visual.

Basis of selection: On the SBMI Student D obtained scores of 29 per cent visual, 41 per cent auditory, and 29 per cent kinesthetic. This student had an auditory score 12 points higher than both his visual and kinesthetic modes. He was one of two students in the class with a significantly higher auditory score. On these bases this student was selected for the study.

Observation of Auditory Learners' Characteristics:

Conformity: Observing Student D suggested that he fit into some of the characteristics attributed to auditory learners. He sometimes vocalized letters when spelling a word, was excellent in phonics, and used sound-letter relationships. Student D remembered details when asked but did not readily attribute importance to them. Student D enjoyed talking at length and telling stories as long as someone would listen. His response to inactivity was to talk to someone. He also liked to hear others talk and read aloud. The sound of talking distracted

him but other sounds around the classroom did not.

Non-conformity: Student D had several characteristics that did not fit the auditory learner. He did not subvocalize or move his lips when reading. He was observant of illustrations accompanying text. His handwriting was done with a firm stroke and he did not vocalize strokes or letters while writing. Though Student D liked to talk during inactive times, he was also observed finding a friend and sitting to read silently or reading silently alone. In general appearance and with his possessions Student D was neat.

Treatment: Student D participated in spelling lessons with one other student in the auditory modality group. The first two weeks this student supplemented regular class work by listening to the words spelled on tape and spelling words aloud with the other auditory learner. The next four weeks lessons were recorded on tape and the student listened while observing a word list to facilitate response.

Results of treatment: During the six weeks of the study Student D's daily work averaged 83 per cent accuracy. His six week average prior to employing his specific modality strength was 88 per cent. The six weeks before the study Student D's average on tests was 94 per cent. During the six week study Student D averaged 92 per cent. Working only in the auditory modality had a negative effect on the work and results for Student D.

Prognosis: This student did not show evidence that his instruction needed to be geared to his modality strength. While

his life-style appeared to be gregarious with much auditory exchange, it did not appear that his learning experience needed this structure.

b. Student E

Background: Student E was a right-handed, third grade female, 8 years, 11 months old with an IQ of 115 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in kindergarten (April 1978) she obtained stanine scores of 5 in auditory and 4 in visual.

Basis of selection: On the SBMI Student E obtained scores of 31 per cent visual, 48 per cent auditory, and 20 per cent kinesthetic. This student had an auditory score 17 points higher than both her visual and kinesthetic modes. She was one of two students in the class with a significantly higher auditory score. On these bases this student was selected for the study.

Conformity: Most of the observations of Student E conformed to the characteristics of an auditory learner. She tended to vocalize her reading and liked to read aloud. She was unobservant of illustrations that accompany text material. Student E had poor visual imagery. Items that were clear to other children had to be explained to her. She had good word attack skills and used them in spelling. She was easily distracted by speaking, classroom noise, paper shuffling, or people moving. Student E liked to talk to anyone nearby but not in lengthy conversation. In general, Student E did not appear to be interested in her appearance. She made no efforts toward being tidy.

Non-conformity: Student E was concerned about the appearance of her handwriting. She gripped the pencil tightly and used a very firm stroke. Poor coordination resulted in some difficulty with writing. Her response to inactivity was a lot of body movement, fidgeting, handling something, or looking from person to person to observe what others were doing. While Student E liked to speak with others, she did not engage in long repetitive descriptions. She appeared shy and this may have restricted her discourse.

Treatment: Student E participated in spelling lessons with one other student in the auditory modality group. The first two weeks this student supplemented regular class work by listening to the words spelled on tape and spelling words aloud with the other auditory learner. The next four weeks lessons were recorded on tape and the student listened while observing a word list to facilitate response.

Results of treatment: During the six weeks of the study Student E's daily work averaged 92 per cent accuracy. Her six week average prior to employing her specific modality strength was 84 per cent. The six weeks before the study Student E's average on tests was 93 per cent. During the six week study Student E averaged 89 per cent. Working in the auditory modality gave good short term results on daily lessons. However, it appears that there was a negative influence on long term memory required for testing.

Prognosis: Observations of Student E showed considerable conformity to the characteristics of an auditory learner. Her

daily work showed evidence that she benefited from lessons presented in the auditory modality. It appears that more presentations in this mode would increase accuracy when short term memory is required. The problem will be devising ways to facilitate long term memory if lessons are taught auditorily.

3. Kinesthetic Learner

a. Student F

Background: Student F was a right-handed, third grade male, 9 years, 7 months old, with an IQ of 115 on the Henmon Nelson Test given two years earlier (March 1979). On the Metropolitan Readiness Test given in kindergarten he obtained stanine scores of 6 in auditory and 7 in visual. While this did not apply to his higher kinesthetic score it did correspond to a higher visual than auditory score on the SBMI.

Basis of selection: On the SBMI Student F obtained scores of visual 30 per cent, auditory 27 per cent, and kinesthetic 41 per cent. On the basis of the kinesthetic score being 11 points higher than the visual score and 14 points higher than the auditory score Student F was selected to be part of the study.

Observation of Kinesthetic Learners' Characteristics:

Conformity: Student F was observed to fit many of the characteristics of students with dominant kinesthetic modality. Though a good reader, he was not an avid reader and could be classified as a book handler. Rapid correction of words written in sand or on chalkboard contrasted with no correction of oral misspelling. This indicated a sense of feeling the right spelling. Student F used considerable pressure on his pencil and had

better handwriting when done in large size. His response to inactivity was one of restlessness. He often left his seat for a drink and did not readily find things to do. Student F was neat in appearance but his materials often became disorganized as he worked.

Non-conformity: There were some characteristics of Student F that did not fit the kinesthetic learner. While there was little indication that Student F had much imagery it may be that this was simply not communicated. He was not easily distracted during presentations that were visual or auditory. He was a good listener. Though somewhat shy when speaking, he did not tend to stand closer when speaking or listening.

Treatment: For the first two weeks Student F worked with the rest of the third grade students during spelling lesson presentation. This was supplemented by writing the spelling words in a sand tray and assembling words with plastic bulletin board letters. During the next four weeks Student F had lessons alone. While questions and discussions could not be done in the kinesthetic modality all responses were in that mode. The student assembled and disassembled words using cardboard letters and worked again with plastic bulletin board letters. He wrote in a sand tray, on the chalkboard, and on a magic slate. This was done with whole words, like parts of words, rhyming words and any other features significant to the word. Pointing was also used.

Results of treatment: During the six weeks of study Student F's daily work averaged 92.5 per cent accuracy. His six

week average prior to employing his specific modality strength was 88.5 per cent. The six weeks before the study Student F's average on tests was 93 per cent. During the six week study Student F averaged 94 per cent on tests. Working in the kinesthetic modality appeared to give a minimal benefit to this student's daily work but had very little carry-over to longer term memory involved in testing.

Prognosis: Student F showed improvement in his work as the study progressed. This would indicate that teaching to his modality strength was helpful and continued work would show more progress. It would be advantageous for Student F to use a kinesthetic method when encountering difficulty learning a new task.

III. SUMMARY

This study concerned using a student's modality strength as determined on the Swassing/Barbe Modality Index to increase accuracy on spelling lessons and tests. Results were reported in case studies.

All seventeen pupils in a class of second and third graders were administered the SBMI. After results were compiled it was determined that only pupils from third grade would be used since the auditory and kinesthetic learners were in that group. Five to six cases was to be the maximum number.

The two students with an auditory modality strength were chosen. Three students with visual modality strength were chosen because their scores were far above their next higher modality. The student with the strongest kinesthetic modality was selected to reach the limit of six cases (Appendix A).

The study was to follow students through their regular classroom work. Appraisal of the work to be covered by third grade indicated that the area of spelling provided the most consistency from week to week. Therefore, the study followed six cases through a six week period using the third grade text Spell Correctly (Silver Burdett Co., 1971).

The first two weeks each student supplemented the lesson presented to the entire third grade with activities in his/her own modality. The following four weeks the students worked only in their own modality. The visual learners worked in their group of three. The two auditory learners comprised a group. However, listening to a tape was more an individual than

group task. The kinesthetic learner worked alone.

Visual learners' tasks and words were written on cards and charts. Their responses were given with word cards. The auditory learners listened to tapes while following a word list to facilitate responses. The kinesthetic learner used 3-dimensional letters, writing in various media, and pointing to word lists.

There was difficulty developing tasks in a pure modality. It could not be done in the regular classroom situation. The auditory modality had to enter into the work of the kinesthetic learner or he and the teacher could not communicate. The text book was used to keep the instruction as nearly like regular classroom work as possible. This determined that everyone had to use the visual modality. Auditory learners had to have word lists to look at in order to make responses. Visual learners and the teacher had some auditory exchange, but it was kept minimal. They did have word cards to handle which involves the kinesthetic mode.

All of the children had IQs above average on the Henmon Nelson Test (March 1979). They were experiencing no special learning problems when they entered the study. Each of the children had been given the Metropolitan Readiness Test which results in stanine scores for the auditory and visual modality. Though this test was given three years earlier (April 1978) each student in the study who scored a higher visual stanine than auditory stanine also had a higher visual score on the SBMI. The same was true of those who had higher auditory stanines

on the Metropolitan Readiness Test. They had higher auditory scores on the SBMI.

Students were observed for selected characteristics associated with specific modalities by Barbe and Swassing (Appendix B). It was interesting to note that students did not conform to some of the characteristics suggested to be typical for students with their modality of strength. No student conformed in all ways. Some of the students showed characteristics assigned to other modalities. In the area of communication one of the visual learners was very verbose while one of the auditory learners speaks without long discourse. There was no modality in which every student conformed to the characteristics that Barbe and Swassing have identified.

Gains or losses were determined by averaging the percentage scores on spelling lessons and spelling tests for the six weeks prior to the study and comparing them to the average scores for the six weeks of study. The results of having lessons presented in the student's strongest modality did not show appreciable gains. However, five of the six students showed some gain in their daily work. Only three students showed any gain in testing. Those who did not show gains showed losses both in daily work and testing. Student B, a visual learner, and Student E, an auditory learner, each showed a gain in daily work of 8 points. This was the highest gain shown. Other gains in daily work ranged from 1.5 to 4 points. Student B made a 4 point gain in testing. The other gains were 3 points, another visual learner, and 1 point for the kinesthetic learner. The greatest

loss was 5 points for Student D, an auditory learner, in daily work. Both auditory learners had losses in testing of 2 and 4 points. Student C, a visual learner, had a loss of 2.5 points in testing. This information is summarized in Appendix C.

All students except Student D, an auditory learner, had some benefit from instruction through their modality strength. The three visual learners made gains in daily work, although Student A's gain was minimal. Two of the visual learners gained on tests. Student F, the kinesthetic learner, gained in daily work and minimally on tests. The auditory learners showed the least gain. Student D had losses in both daily work and tests. Student E made one of the highest gains in daily work but also had a loss in testing. This may be significant in relation to Jenson's study (1970). He found that auditory memory was better for immediate recall while visual memory was better for long term recall.

Five of the students in this study did just as well or better than their previous work. Daily work showed the most results. Only one student declined in performance. Overall results did not produce outstanding gains.

IV. CONCLUSIONS

Collecting data on cases in this study did not produce statistically provable information, but it did produce knowledge of how pupils function under a regular classroom setting and not in clinical conditions.

Teaching to the modality strengths identified on the SBMI appeared to improve the daily spelling work of five out of the six students in the study. The result of instruction on testing showed minimal gain for only three students and losses for the three others. Teaching through a specific modality appeared to have a short term effect but not a long term effect.

When improvement was seen it might be questioned whether it was due to the modality being used or to the one-to-one and small group instruction. It may be that student gains were the result of individual attention rather than any specific method or modality.

The students in this study had auditory and visual scores from the Metropolitan Readiness Test. Students with strong visual modalities on the SBMI also had a higher visual score on the Metropolitan Readiness Test. There were identical results for auditory scores. More investigation may indicate that a classroom teacher could use the results of the Metropolitan Readiness Test to identify a student that would benefit from auditory or visual instruction without using the SBMI.

Observing characteristics linked to certain modalities was interesting, but care must be taken in using this observa-

tional data as an indication of a particular modality. There was too much non-conformity and there were too many characteristics that could not be readily observed in the classroom. The identification of characteristics may have helped in understanding students but did not assist instruction.

Due to the impurity of instructional methods it is unclear why positive results occurred for certain students. More ways need to be developed for instructing through one modality without involving the others if conclusions are to be drawn about the value of modality instruction.

All six students in this study would function well without instruction in their strongest modality. However, Students B and E showed enough gain to indicate that instruction in their modality of strength may facilitate handling a difficult task. Student F showed a developmental pattern that indicated modality instruction might assist learning. The other three students would make minimal gain, if any, being instructed in their strongest modality as identified on the SBMI.

The cases in this study indicated there was not a great deal of interaction between the instructional mode and the learner's modality strength. Students made no appreciable gain in spelling accuracy being instructed through their strongest modality in standard classroom work.

V. RECOMMENDATIONS

Recommendations on use of the SBMI would be limited to students with special learning problems. It would not be recommended that an entire class be tested with the SBMI. If a student was having learning difficulty, the identification of his/her strongest modality could be helpful in designing remediation. The SBMI could be helpful in some special education situations where instruction through specific modalities is felt by teachers to be important due to lower intelligence or specific handicaps. The SBMI could be easily administered by the teacher.

The same type of case study repeated on first graders and sixth graders might produce some information about the development of modalities as has been suggested by research. (Stevenson; Gilberg and Gilberg; Silverston and Deichmann)

More study needs to be done concerning the results of modality instruction on long term memory. Since there appear to be benefits to some students as the result of modality instruction, it merits further study.

The school that has purchased the SBMI kit should instruct every teacher on the administration of the test. It should be accessible for any teacher to use or for administration by a counselor.

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APPENDIX A

Test Results Given in Percentage Scores

Grade 3

	Visual	Auditory	Kinesthetic
Student A	56	20	24
Student B	53	25	20
Student C	45	27	26
Student D	29	41	29
Student E	31	48	20
Student F	30	27	41
Student G	44	21	35
Student H	37	36	27
Student I	36	22	42
Student J	29	33	37

Grade 2

Student K	76	21	2
Student L	58	18	23
Student M	48	28	23
Student N	44	26	29
Student O	43	14	43
Student P	15	43	43

APPENDIX B

Characteristics Indicative of Modality Strength Most Readily Observed in One Classroom Setting

Selected and adapted from Barbe/Swassing lists*

	Visual	Auditory	Kinesthetic
Reading	stops reading to stare into space; intense concentration	moves lips or sub-vocalizes; overlooks illustrations	fidgets while reading; handles books; not avid reader
Spelling	spells words by sight; relies on word configuration	has and uses word attack skills	writes to feel if word is spelled right
Handwriting	size and space of writing is good; appearance is important	writes lightly; says strokes when writing	writing deteriorates as size diminishes; pushes hard on pencil
Imagery	vivid imagination; visualizes detail	detail not important	little imagery; what occurs accompanied by movement
Distractibility	usually unaware of sounds; distracted by movement and visual disorder	distracted by sounds	easily distracted during visual and auditory presentations
Response to inactive periods	stares or finds something to watch	hums; talks to self and others	fidgets; finds reasons to move; holds up hand
Communication	does not talk at length; restless when listening is extensive	likes to hear self and others talk; long, repetitive descriptions	gestures when speaking; poor listener; stands close when speaking or listening; not interested in detailed discourse
General appearance	neat and orderly	matching not significant; can explain choices	neat but becomes disordered during activity

*Barbe, W. B., and Swassing, R. H., Teaching Through Modality Strengths: Concepts and Practices, pages 44-45.

APPENDIX C

Figure 1

Daily Work and Test Averages Prior to and During Study

Visual Learners

	Student A		Student B		Student C	
	Daily work	Tests	Daily work	Tests	Daily work	Tests
6 weeks prior to study	91.5%	88%	84%	90.5%	91%	94%
6 weeks during study	93%	91%	92%	94.5%	94%	91.5%
Gain or loss	1.5	3	8	4	3	-2.5

Figure 2

Daily Work and Test Averages Prior to and During Study

Auditory Learners

	Student D		Student E	
	Daily work	Tests	Daily work	Tests
6 weeks prior to study	88%	94%	84%	93%
6 weeks during study	83%	92%	92%	89%
Gain or loss	-5	-2	8	-4

Figure 3

Daily Work and Test Averages Prior to and During Study

Kinesthetic Learner

Student F

	Daily work	Tests
6 weeks prior to study	88.5%	93%
6 weeks during study	92.5%	94%
Gain or loss	4	1